



Commonwealth of Massachusetts Executive Office of Labor and Workforce Development Department of Labor Standards

Executive Order #511 **Electrical Safety – General** Summary of Standards and Recommendations

This summary of standards was prepared by the Massachusetts Department of Labor Standards (“DLS”) for informational purposes and does not constitute an official interpretation by OSHA or any other agencies/entities listed as a source of standards or guidance in this document, nor an exhaustive recitation of the requirements therein. Rather, the summary is provided for the health and safety committees to assess current health and safety management of this hazard against the nationally-recognized standard. As the information provided in this document is only a summary, please consult the full standard(s) as well as any other needed sources of technical assistance for developing or improving your general electrical safety program.

It is important to note that state workers are not covered by OSHA standards; the information generated by the health and safety committees will serve to guide the Massachusetts Employee Safety and Health Advisory Committee in identifying effective and practical strategies and policies for improving the health and safety of state workers.

Primary Technical Standard or Guideline:

OSHA 29 CFR 1910, Subpart S – Electrical*. The portions of the standard primarily covered in this document are: 1910.103, General requirements, and 1910.305, Wiring methods, components, and equipment for general use.

Note 1: The OSHA electrical standards are based entirely on the National Electric Code which is a product of the National Fire Protection Association (NFPA). Specific NFPA code references are provided at the end of OSHA 1910, Subpart S.

Note 2: This document only provides very basic electrical safety requirements for electrified equipment users, and does not cover the specifications for installation and maintenance of interior electrical infrastructure such as wiring and fixed electrical equipment such as lighting. This is beyond the scope of the current assessment being conducted by the health and safety committees. For your information, the relevant OSHA portions of the OSHA electrical standard for general industry for these issues are:

1910.302, Electric utilization systems, and 1910.304, Wiring Design and Protection

Note 3: Electrical risks from repairing or maintaining electrified equipment are covered in the “answers” documents for Electricians and for Lockout/Tagout and are not covered in this document.

** This is the primary national or state standard/guideline for this hazard. Your agency may be following an internal standard of practice or a standard from another source for this hazard. For the gap analysis, if you are following a standard other than the primary worker protection standard listed above, please indicate which standard, if any, is being followed by your agency. If this is an internal standard of practice, please report the basis upon which the determination was made to adopt the standard.*

General Electrical Safety Concepts in the Standard:

- No live electrical parts exposed (e.g., proper coverings on wall outlets, no open receptacles, no open circuits in panel box, no wires with damaged insulation).
- No overloading of circuits (e.g., don't plug too many items into one outlet or circuit).
- Use of outlet and cords (the gauge of the conductor wire must be large enough with sufficient capacity to safely carry the current drawn by the electrical device or tool being used. This can cause overheating and possible fire without tripping the circuit breaker).
- Proper grounding of electrical devices to avoid electrical shock or electrocution. DO NOT remove grounding pin or use cords with a missing grounding. Much older equipment such as refrigerators may not be properly grounded, and must be taken out of service.
- Only use electrical equipment that has been tested and determined to be safe for use by the Underwriters Laboratory or other nationally recognized testing laboratories. This will be shown by a “UL” (or other agency) stamp or tag. The electric equipment must only be used in accordance with the manufacturer's instructions or any instructions included with the listing or labeling.
- For construction sites, all temporary wiring must be on Ground Fault Circuit Interrupters (GFCIs).
- Use of equipment as intended (e.g., no use of cheater plugs to convert a three-pronged plugs for use in a two-pronged outlet or extension which circumvents the grounding.)
- Properly maintain electrical equipment. Do not use damaged electrical equipment or tools (e.g., broken plugs, fraying or otherwise compromised wires).
- Increased electrical hazard in wet environments, use of GFCIs required for all outlets near water. GFCI should be tested monthly with test button on device.
- Limitations on use of flexible cords (extension cords).
 - Cords should not be dragged over or supported or fixed in place by hooks, nails, staples, or other sharp objects.

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- Cords should not be run under carpet, or through windows, doors, or other openings.
 - Serial/tandem use of extension cords (more than one cord plugged end to end) is not allowed.
 - Extension cords can only be used for temporary use, not for any permanent installations.
- Limitations on use of relocatable power taps (power strips).
 - To be used for electronics such as computer-related equipment, stereos, and TVs only. NOT to be used for space heaters, coffee makers, microwaves, toaster ovens, hot pots, and other high draw items.
- Use of fuses or circuit breakers to protect against overcurrent hazards.

Policy:

There is no specific written policy requirement under this standard. It is recommended that the agency have as a general policy that all OSHA and NFPA standards relative to electrical safety be followed.

Training and Certification/Licensing Requirements:

For those who only use electrified equipment, there is no specific training requirement. In general, employees should be instructed in proper use of any assigned electrified equipment, and how to generally recognize and report obvious electrical hazards, such as exposed wires due to loss of insulation.

Only qualified persons may work on electric circuit parts of equipment that has not been de-energized as per the OSHA lockout/tagout provisions. Required training, licensing, and procedures for those who will work on electrical infrastructure or electrified equipment is covered in the “answers” documents for Electricians and also Lockout/Tagout.

Engineering Controls – Requirements:

There are no separate engineering controls for basic electrical hazards for users of electrified office-type equipment/devices. Instead, controls are embedded into the electrical devices (such as GFCIs in outlets) or occur through proper use of approved and maintained devices (intact cords, no overloading of circuits, etc.).

For this section, compare what is in place in your workplace against what is listed in the section “General Electrical Safety Concepts” above.

Administrative Controls – Requirements:

There is no specific requirement for any administrative controls. However, facilities personnel should have a general awareness of the current condition of electrical infrastructure and proper use of cords and electrified equipment within the facility. This may be accomplished through periodic facility inspections. Local fire prevention personnel may also review electrical hazards as part of their periodic inspections.

Equipment Controls – Requirements:

There are no separate items of safety equipment for basic electrical hazards for users of electrified office-type equipment/devices.

Web link to full standard or guideline:

Informational resources identified below can also be found on our website at www.mass.gov/dols/eo511.

OSHA Standards:

www.osha.gov, select the “Regulations” tab from the top menu bar. For 1910 standards select the “General Industry” tab. For 1926 standards, select the “Construction” tab. Then, scroll down to find the standard by subpart or number.

OSHA 29 CFR 1910, Subpart S – Electrical